COURSERA CAPSTONE PROJECT

Where to move within Germany,

if you want to enjoy the night
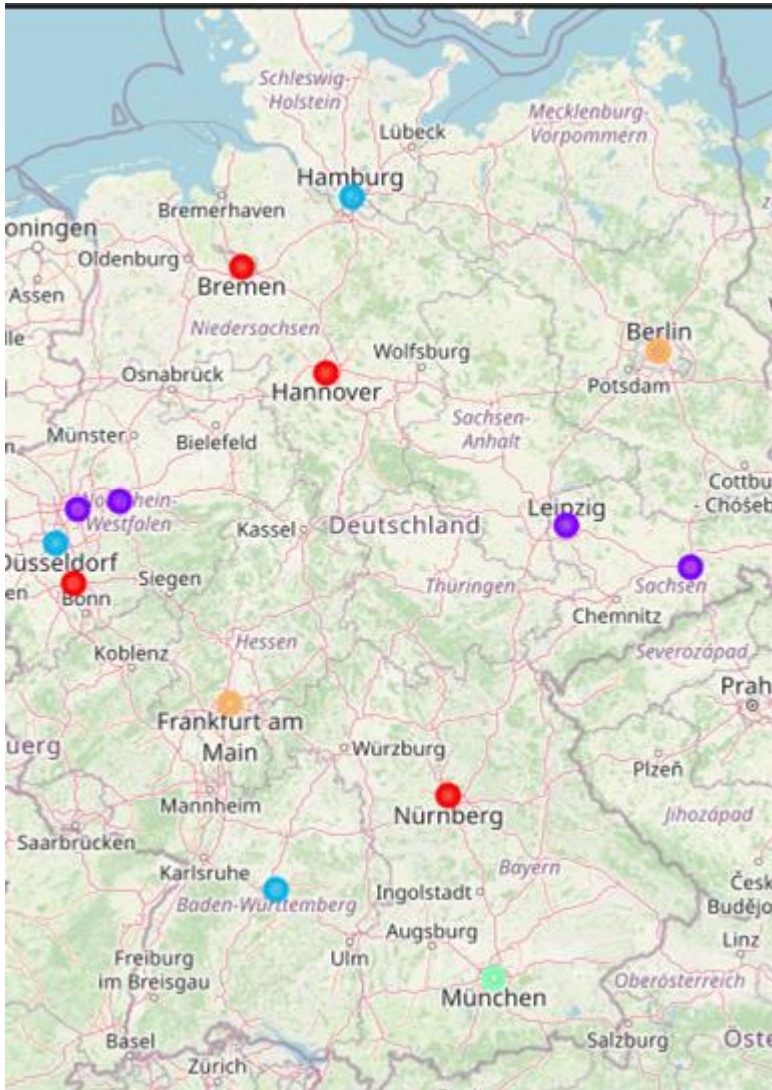
while caring about rental prices and wages?

What was I doing?

- Using a cluster analysis, I wanted to make it easier to compare different cities

- Young people should be able to form an easier impression whether less famous cities (e.g. Nuremburg, Hannover, Bremen) in Germany could be equally attractive compared to big established cities such as Berlin or Munich.

- Foursquare data about the diversity or pattern of potential nightlife activities in a city was used to determine which cities resemble each other regarding their nightlife in order to analyze options for people seeking to relocate.

- As even the most hedonistic night owl needs to eat and sleep at some place, accounting for rental prices and average income was thought to be useful.

Data

- For my analyses, I used data on Income, Rental Prices and a city's nightlife.

- I decided to focus the analyses on cities with more than 500 000 Inhabitants. A useful overview is found here: https://de.wikipedia.org/wiki/Liste_der_Gro%C3%9F-_und_Mittelst%C3%A4dte_in_Deutschland

- The foursquare API provided me with useful information about the type of nightlife spots in a given city.

- Additionally rental prices for these cities were needed (found here: https://de.statista.com/statistik/daten/studie/167163/umfrage/mietentwicklung-in-den-deutschen-).

- Finally data on average income was used: https://de.statista.com/statistik/daten/studie/998971/umfrage/verfuegbares-einkommen-in-den-groessten-staedten-in-deutschland/

The results (including informal nicknames)

Cluster 1: Purple; „Down to earth"
Essen, Dortmund, Leipzig, Dresden

Cluster 2: Blue; „The fancy ones"
Hamburg, Stuttgart, Düsseldorf

Cluster 3: Green; „Well… Munich"
München (Munich)

Cluster 4: Yellow; „The cosmopolitans"
Berlin, Frankfurt

Cluster 5: Red; „The normal ones"
Bremen, Hannover, Köln (Cologne),
Nürnberg (Nuremberg)

Cluster 1 (purple ‚down to earth'): Low Income, Cheap rents, offering Bars, Nightclubs and Pubs

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      df_ov.loc[df_ov['Cluster Labels'] == 0]
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	Stadt	Cluster Labels	Size	Verfügbares Einkommen in Euro	Mietpreis H1 2019 in Euro/m²	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue
10	Leipzig	0	587857	17.770	6.8	Bar	Nightclub	Pub	Gastropub
11	Dresden	0	554649	18.922	7.6	Bar	Nightclub	Pub	Gastropub
12	Dortmund	0	587010	18.946	7.0	Bar	Nightclub	Pub	Gastropub
13	Essen	0	583109	20.159	7.0	Bar	Nightclub	Pub	Gastropub

5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
Cocktail Bar	Café	Beer Garden	Restaurant	Brewery	Lounge
Cocktail Bar	Café	Beer Garden	Restaurant	Brewery	Lounge
Cocktail Bar	Café	Beer Garden	Restaurant	Brewery	Lounge
Cocktail Bar	Café	Beer Garden	Restaurant	Brewery	Lounge

Cluster 2 (blue; ‚the fancy ones'): High Income, High rents, offering Bars, Cocktail Bars and Pubs

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df_ov.loc[df_ov['Cluster Labels'] == 1]
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	Stadt	Cluster Labels	Size	Verfügbares Einkommen in Euro	Mietpreis H1 2019 in Euro/m²	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue
7	Stuttgart	1	634830	25.012	13.0	Bar	Cocktail Bar	Pub	Nightclub
8	Hamburg	1	1841179	24.421	11.8	Bar	Cocktail Bar	Pub	Nightclub
9	Düsseldorf	1	619294	24.882	10.6	Bar	Cocktail Bar	Pub	Nightclub

5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
Gastropub	Café	Brewery	Wine Bar	Beer Garden	German Restaurant
Gastropub	Café	Brewery	Wine Bar	Beer Garden	German Restaurant
Gastropub	Café	Brewery	Wine Bar	Beer Garden	German Restaurant

Cluster 3 (green; ‚well…Munich'): High Income, High rents, offering Bars, Cockail Bars and Cafés

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df_ov.loc[df_ov['Cluster Labels'] == 2]
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	Stadt	Cluster Labels	Size	Verfügbares Einkommen in Euro	Mietpreis H1 2019 in Euro/m²	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue
2	München	2	1471508	29.685	18.6	Bar	Cocktail Bar	Café	Beer Garden

5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
Bavarian Restaurant	German Restaurant	Pub	Hotel Bar	Wine Bar	Gastropub

Cluster 4 (yellow, ‚the cosmopolitans'): Average Income, Average to high rents, offering Bars, Cocktail Bars and Wine Bar

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     df_ov.loc[df_ov['Cluster Labels'] == 3]
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	Stadt	Cluster Labels	Size	Verfügbares Einkommen in Euro	Mietpreis H1 2019 in Euro/m²	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue
0	Berlin	3	3644826	19.719	11.6	Bar	Cocktail Bar	Wine Bar	Gastropub
1	Frankfurt am Main	3	753056	21.690	14.2	Bar	Cocktail Bar	Wine Bar	Gastropub

5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
Nightclub	Pub	Lounge	Beer Garden	Beer Bar	Hotel Bar
Nightclub	Pub	Lounge	Beer Garden	Beer Bar	Hotel Bar

Cluster 5 (red, ‚the normal ones'): Average Income, Average rents, offering Bars, Cocktail Bars and Pubs

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df_ov.loc[df_ov['Cluster Labels'] == 4]
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	Stadt	Cluster Labels	Size	Verfügbares Einkommen in Euro	Mietpreis H1 2019 in Euro/m²	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue
3	Nürnberg	4	518365	21.785	10.0	Bar	Cocktail Bar	Pub	Nightclub
4	Hannover	4	538068	20.977	8.8	Bar	Cocktail Bar	Pub	Nightclub
5	Köln	4	1085664	21.608	10.9	Bar	Cocktail Bar	Pub	Nightclub
6	Bremen	4	569352	21.327	8.2	Bar	Cocktail Bar	Pub	Nightclub

5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
Beer Garden	Brewery	Gastropub	Lounge	Café	Hookah Bar
Beer Garden	Brewery	Gastropub	Lounge	Café	Hookah Bar
Beer Garden	Brewery	Gastropub	Lounge	Café	Hookah Bar
Beer Garden	Brewery	Gastropub	Lounge	Café	Hookah Bar

Summary: Conclusions

- Especially for those looking to find a cheap place to study and to go out dancing, It might be worth looking to the far west (Essen/Dortmund) in addition to increasingly popular cities in the far east (Dresden/Leipzig)

- Hamburg, Stuttgart and Dusseldorf have a reputation as comparably rich cities. This is supported by the analyses

- Munich is unique in terms of living costs, income and its high number of Beer gardens, Bavarian Restaurants and German restaurants, qualifying as nightlife spot

- Berlin has a comparably large gap between income and rental costs. Other cities seems to have more nightclubs (relatively speeking). One might conclude that Berlins local politics need to support its trademark club culture (unlike focussing on the mere number of alternatives) to preserve it's reputation and to remain attractive to students.

- There is a group of cities which (maybe with the exemption of cologne) often goes rather unnoticed and share an average income and average rental cost structure. These cities might benefit from targeting undergraduate students in other cities within the cluster to recruit more students willing to live in less profile cities where Bars, Cocktail Bars, Pubs and Nightclubs are among the most common nightlife spots

Disclaimer

- The criteria I used are by now means exhaustive. Regional differences might make it hard to adapt even when moving within a cluster (Someone from Stuttgart might struggle with a nordic's mentality in Hamburg; as would someone from Cologne in Hannover)

- Within cities such as Hamburg exists a vibrant subculture which would rightfully reject the label „fancy"

- However insight might be useful to orient within Germany